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Burkhard Bustgens

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Jackson Patent Law Office
Suite 100
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EXAMINER

LOUIE, MANDY C

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/502,463	Applicant(s) BUSTGENS, BURKHARD	
	Examiner MANDY C. LOUIE	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-44 and 61-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-44 and 61-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Claims 1-20 and 45-60 are cancelled due to Applicant's amendments.
2. Claims 21-44, 61-63 are under consideration in this office action.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 21-27, 29, 32-33, 38-39, 40-41, 44, 61-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayfield [US 7029199] in view of Boleda [US 2004/0027414].

Regarding claim 21, Mayfield teaches an automatic ground marking apparatus (application device) [abstract] for a civil engineering work such as a turf playing fields or

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fairways [col 1, ln 10] with paint application elements [col 2, ln 45-47], where the apparatus may be used as a surveying tool to produce a digital terrain model (first data) of the surface to be marked from height measurements (geometric properties of external surface) [col 5, ln 63-68; col 6, ln 1-6]. Mayfield also teaches a base station that is fixed to the ground (positioning a stationary component) [col 2, ln 26]. The prior art also teaches generating a map file containing coordinates defining the logo to be demarcated by the apparatus (second data) [col 4, ln 61-63]. Mayfield further teaches moving the application device on the external surface [col 3, ln 6] and measuring a position of the application device by reflectors thereon (non-stationary component attached to application device) [col 2, ln 27] relative to the base station (stationary component) [col 2, ln 19-21, 26], the paint application elements are commanded to apply paint on the external surface based upon the second data and the position of the application device [col 5, ln 7-15, 26]. Although Mayfield does not explicitly teach surveying the external surface to generate a DTM prior to measuring the real-time position of the application device and painting the surface, it would have been obvious to one of ordinary skill in the art to produce the DTM as a stored file (or for the matter, to gather sufficient topographic information of the external surface in relations to the design or logo) to generate a more accurate second data of the external surface, which would then improve the accuracy of the paint application step. Moreover, it would have been obvious to one of ordinary skill in the art to first gather all the relative information of the external surface and collaborate with the desired image in preparation for application of the image on a predetermined designated area external surface, wherein,

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subsequently after “mapping” is sufficiently prepared, coordinate the application process with the location information in order accurately apply the image in the designated area. Mayfield also appears to be silent in teaching applying paint on the external surface wherein paint is not applied at positions that have already been fully painted. Boleda remedies this.

Regarding claim 21, Boleda teaches a method of printing an image on a surface [abstract], where the printing device may be applied to the surface in successive swaths, in which no ink would be fired on the already painted zone, just on the non-painted zone [0041].

It would have been obvious to one of ordinary skill in the art to not print on the previous printed areas. One would have been motivated to do so in order to avoid wasting material and ensure a complete painted image without extreme accuracy.

Regarding claim 22, Mayfield in view of Boleda teaches measuring method based on propagation of light (i.e. laser) between the stationary and non-stationary component [Mayfield, col 2, ln 42].

Regarding claim 23, Mayfield in view of Boleda teaches measuring method may be based on wave propagation time (i.e. gps) between the stationary and non-stationary component [Mayfield, col 2, ln 42-44].

Regarding claim 24, Mayfield in view of Boleda teaches measuring method may include using a laser-source [Mayfield, col 2, ln 20].

Regarding claim 25, Mayfield in view of Boleda teaches measuring a position by observing position information of the surface from laser-based electronic distance

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measuring system including a base station and reflector (inside-out or outside-in method) [Mayfield, col 2, ln 16-21].

Regarding claim 26, Mayfield in view of Boleda teaches further including measuring a movement of the application device by linear velocity, wherein the portion of the second data select is also determined by the step of measuring movement [Mayfield, col 5, ln 17-25].

Regarding claim 27, Mayfield in view of Boleda teaches further including recording an image of a portion of the external surface by using a scanner (i.e. tracking prism or inclinometer) attached to the application unit, and extracting position relevant features from the recorded images including structural features [Mayfield, col 4, ln 35-49].

Regarding claim 29-31, since the teaching of the prior art does not teach where a position is unable to be measured, the steps of any action depended on this condition would not be necessitated. However, further information by the prior art will be provided in regards to some of these claims.

Regarding claim 29, Mayfield in view of Boleda teaches further measuring the movement of the application device by linear velocity for positional values [Mayfield, col 5, ln 17-25], where it would have been apparent that the movement of the marking mechanism would continue to be measured despite if the laser-based electronic distance does not continue since both measuring devices should be operating at the same time [Mayfield col 5, ln 35-45].

Regarding claim 32, Mayfield in view of Boleda teaches the application device is moved manually by an autonomous robot [Mayfield, abstract].

Regarding claim 33, Mayfield in view of Boleda teaches the application device is maintained in contact with the external surface by use of a rolling elements (24) [Fig. 1].

Regarding claim 38, Mayfield in view of Boleda teaches the first data is generated using the stationary component [Mayfield, col 2, ln 42].

Regarding claim 39, although the prior art appears to be silent in teaching a plurality of stationary components, it would have been obvious to one of ordinary skill in the art that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. (See MPEP 2144.05.VI.B).

Regarding claim 40, Mayfield in view of Boleda teaches generating the first data by measuring a physical characteristic (i.e. height) of the external surface [Mayfield, col 2, ln 11-15].

Regarding claim 41, Mayfield in view of Boleda teaches generating the second data includes compensating for features on the external surfaces (i.e. slopes) [Mayfield, col 1, ln 15].

Regarding claim 44, Mayfield in view of Boleda teaches positioning a stationary component in a way to allow the position of the non-stationary component to be measured relative to the stationary component within only a sub-portion of the external surface [Mayfield, col 2, ln 22-25].

Regarding claim 61, Mayfield in view of Boleda teaches the first data may include a CAD-representation of the external surface [Mayfield, col 6, ln 3].

Regarding claim 62, Mayfield in view of Boleda teaches assigning color data to available positions of the external surface [0052].

It would have been obvious to one of ordinary skill in the art to assign colors to the external surface based upon the design. One would have been motivated to do so in order to achieve an aesthetic design that is desirable to the operator.

4. Claims 28, 30-31, 34-36, 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayfield [US 7029199] in view of Boleda, and further in view of Hess [US 20020158955].

Teaching of Mayfield in view of Boleda is aforementioned, but appears to be silent in teaching the limitations of claim 28, 30-31, 34-36, 63. Hess remedies this.

Regarding claim 28, Hess teaches a floor printer [abstract], where if the printer does not sense fiducial markings, the printer stops printing [0099], yet, when the floor printer is moved during such printing process, the sensors continue to determine the relative movement of the floor printer with respect to the medium, and depending upon the new position of the floor printer, the controller sends corresponding print data to the printing device [0100].

It would have been obvious to one of ordinary skill in the art at the time of the invention to continue monitoring the movement of the printer during a visual disturbance of the positioning sensors. One would have been motivated to do so in order to continue monitoring the position of the application device to avoid starting over and wasting operation time and costs.

Regarding claims 30 and 63, Hess teaches the floor printer has been lifted away from the medium, the user is prompted to place the floor printer at a location where the locating device is able to locate the relative position [0098].

It would have been obvious to one of ordinary skill in the art to provide a message to the operator when the application device is unable to provide a valid position. One would have been motivated to do so to quickly remedy the situation and to be notified of errors (i.e. wrong position or surface, misfiring, etc.) that may occur during the printing process and print upon surfaces where it is only desired.

Regarding claim 31, Hess teaches the floor printer has a “hold” function which suspends the floor printer when a position is invalid [0099].

It would have been obvious to one of ordinary skill in the art to suppress the paint application if the position could not be evaluated. One would have been motivated to do so in order to enable the operator to easily re-position the paint application without any difficulties.

Regarding claim 34, Hess teaches there is a slight overlap between printheads in each print swath (areas that are printed (which would be wet at the time when overlapping) or to be printed) [0051, 3d], where a number of paint application elements laterally protrude over to the left or right of the rolling elements [Fig. 8a].

It would have been obvious to one of ordinary skills in the art to have overlapping print areas. One would have been motivated to do so in order to minimize the distinction of two printed areas [Hess, 0051].

Regarding claim 35, Hess teaches the paint application elements employ a drop on demand method (i.e. ink jet) [0040].

It would have been obvious to one of ordinary skill in the art to use a drop on demand method. One would have been motivated to do so have a less complicated application device for printing an image on a surface.

Regarding claim 36, Hess teaches the application device may apply a top coat (fixing coat) [0034], where the application devices are in parallel [Fig. 8a].

It would have been obvious to one of ordinary skill in the art to apply a fixing coat. One would have been motivated to do so in order to protect and keep the integrity of the applied image.

Regarding claim 37, Hess teaches controlling the paint application device which include positioning the paint application (therefore, the paint application elements) to a location of the movement direction by an amount of position offset ahead a measured real time position of the paint application by movement [0092-0094].

It would have been obvious to one of ordinary skill in the art to position the paint application at a position offset ahead a measured real time of the paint application to compensate for the loss in time between transmitting of data and accurately apply the image on the correct designated area.

5. Claim 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayfield in view of Boleda, and further in view of Suenaga [US 3553371].

Teaching of Mayfield in view of Boleda are aforementioned appears to be silent in detecting a color to generate the first data and second data (claims 42-43, more

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specifically using a photoelectric transducer to generate color data that is incorporated into the second data. Suenaga teaches these deficiencies.

Regarding claims 42-43, Suenaga teaches a method for enlarged multicolor printing [abstract], where a number of photoelectronic transducer elements are provided for the optical system as detecting means [col 3, ln 31-33], where the optical system is used to detect colors of the original (image), which is converted into information and used to print different colors onto a larger surface for an enlarged image [col 3, ln 10-19]. Positional data for the printing heads (second data) are determined by the optical system by detecting color [col 3, ln 10-19]. The original image data can be stored into a suitable memory means [col 7, ln 16-30] It would have been obvious to one with ordinary skill in the art to use the optical system to detect colors from a surface to generate first data (i.e. geographical information of the target surface), provided the target surface have previously printed color patterns to be used as references, to first map out the surface upon which a design is desired. One would have been motivated to do so to further simplify the sensing system by monitoring only one surface with minimal amount of sensors and decrease any printing misalignments (since only one surface is only being scanned, rather than having one surface being model after a smaller original surface) upon the targeted surface, where resizing of the original image can be performed (calculated mathematically) more accurately by a processing unit. In light of Mayfield and Boleda and Suenaga, it would have been apparent that by using this optical sensing system to determine the first data, will also be used to compensate for any color features (found from the first data) to provide color information for generating

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second data (i.e. pinpoint desirable location for the printing heads) to print upon a surface.

It would have been obvious to one with ordinary skill in the art at the time of the invention to use a photoelectric transducer to map the surface of the target surface (generate first data) and provide color information as a supplement to reproduce a design image on a larger surface (generating second data). One would have been motivated to do so in order to develop an easily operable and economically producible multicolor printing device [Suenaga, col 2, ln 61-63], which would minimize the number of sensing means to simplify the system [col 3, ln 5-20] and may be used upon surfaces that previously had a design that would require the system to reproduce image in the exact location in the most efficient manner by using a photoelectric sensing system that would accurately determine the correct colorant to be applied upon the surface.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

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be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 21-27, 29, 32-33, 38-39, 40-41, 44, 61-62, are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 17, 21-22 of copending Application No. 11813009 (hereinafter '009) in view of Mayfield and Boleda.

Although the conflicting claims are not identical, they are not patentably distinct from each other because a method of applying paint with a paint applying tool (application device having paint application elements), where fixed references marks (stationary component) are positioned; determining the position of a point relative to the surface (receiving first data of a surface) measuring the position of the displaceable part of the paint apply tool to the reference marks (measuring a position of non-stationary component relative to stationary component, the non-stationary component attached to the application device). Since the '009 does not indicate measuring the step of measuring a position would be invalid, the step of measuring a movement would not be necessitated. '009 fails to teach applying a design onto a surface of a building or civil engineering work with forming a second data on the geometry of the surface and controlling the paint application element by applying paint to a region which paint is not already applied. Mayfield and Boleda remedies this.

Teaching of Mayfield.

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It would have been obvious to one of ordinary skill in the art to apply such method to a civil engineering work with complex topography. One would have been motivated to do so in order to accurately and quickly apply a desirable image to a large surface. Moreover, it would have been obvious to one of ordinary skill in the art to first gather all the relative information of the external surface and collaborate with the desired image in preparation for application of the image on a predetermined designated area external surface, wherein, subsequently after sufficient preparation, coordinate the application process with the location information in order accurately apply the image in the designated area. Mayfield appears to be silent in teaching applying paint on the external surface wherein paint is not applied at positions that have already been fully painted. Boleda remedies this.

Regarding claim 21, Boleda teaches a method of printing an image on a surface [abstract], where the printing device may be applied to the surface in successive swaths, in which no ink would be fired on the already painted zone, just on the non-painted zone [0041].

It would have been obvious to one of ordinary skill in the art to not print on the previous printed areas. One would have been motivated to do so in order to avoid wasting material and ensure a complete painted image without extreme accuracy.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

3. Applicant's arguments with respect to claim 21-44, 61-63 have been considered but are moot in view of the new ground(s) of rejection due to Applicant's amendments.

Conclusion

1. No claim is allowed.
2. Claims 21-44, 61-63 are rejected for the reasons aforementioned.
4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **MANDY C. LOUIE** whose telephone number is

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(571)270-5353. The examiner can normally be reached on Monday to Friday, 7:30AM - 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571)272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. C. L./
Examiner, Art Unit 1792

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1792